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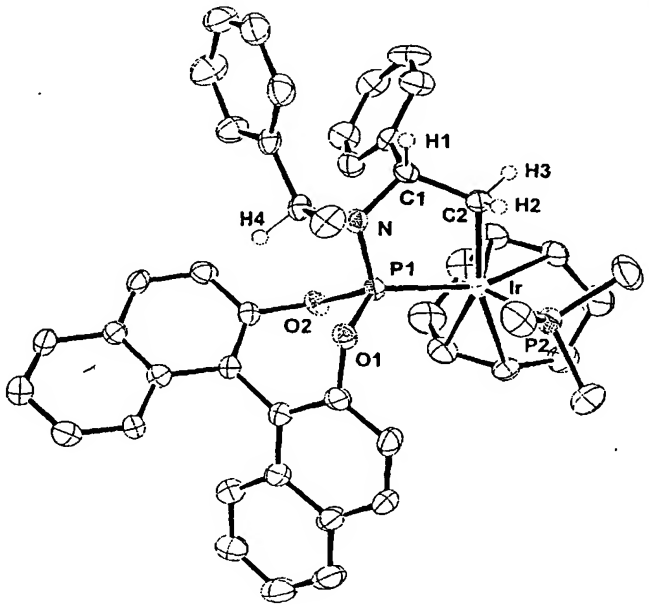
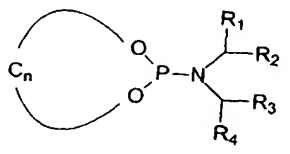
(54) Title: ENANTIOSELECTIVE AMINATION AND ETHERIFICATION





(57) Abstract: The present invention is directed to a catalyst composition, comprising: (1) a catalyst precursor having the general structure MSX_n wherein M is a transition metal selected from the group consisting of iridium, molybdenum, and tungsten; S is a coordinating ligand; X is a counterion; and n is an integer from 0 to 5; and (2) a phosphoramidite ligand having the structure wherein O-C_n-O is an aliphatic or aromatic diolate and wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of substituted or unsubstituted aryl groups, substituted or unsubstituted heteroaryl groups, substituted or unsubstituted aliphatic groups, and combinations thereof, with the proviso that at least one of R_1, R_2, R_3, or R_4 must be a substituted or unsubstituted aryl or heteroaryl group. The present invention is also directed to activated catalysts made from the above catalyst composition, as well as methods of allylic amination and etherification using the above catalysts.

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